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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (currently amended) A fiber lens, comprising:
a graded-index lens;
a single-mode fiber disposed at affixed to a first end of the graded-index lens; and
a refractive lens having a hyperbolic shape formed at a second end of the graded-index lens to focus a beam from the single-mode fiber to a diffraction-limited spot.
- 2-3. (cancelled)
4. (previously amended) A fiber lens, comprising:
a graded-index lens;
a single-mode fiber disposed at a first end of the graded-index lens;
a refractive lens having a hyperbolic or near-hyperbolic shape disposed at a second end of the graded-index lens to focus a collimated or non-collimated beam, respectively, from the single-mode fiber to a diffraction-limited spot; and
a coreless spacer rod interposed between the refractive lens and the graded-index lens.
5. (currently amended) A fiber lens, comprising:
a graded-index lens;
a single-mode fiber disposed at a first end of the graded-index lens;
a refractive lens having a hyperbolic or near-hyperbolic shape disposed at a second end of the graded-index lens to focus a beam from the single-mode fiber to a diffraction-limited spot,
the refractive lens having a uniform refractive index; and
a spacer rod interposed between the graded-index lens and the single-mode fiber.
6. (currently amended) The A fiber lens of claim 1, comprising:

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a graded-index lens;
a single-mode fiber disposed at a first end of the graded-index lens; and
a refractive lens having a hyperbolic shape formed at a second end of the graded-index lens to focus a beam from the single-mode fiber to a diffraction-limited spot;
wherein a mode field diameter of the spot is less than 10 μm .

7. (original) The fiber lens of claim 6, wherein the mode field diameter of the spot is in a range of approximately 2 to 5 μm .

8. (original) The fiber lens of claim 6, wherein a working distance of the fiber lens is greater than approximately 5 μm .

9. (original) The fiber lens of claim 6, wherein a working distance of the fiber lens is in a range from approximately 20 to 60 μm .

10. (original) The fiber lens of claim 6, wherein a ratio of distance from a tip of the refractive lens to the beam waist to the mode field diameter at the beam waist is greater than approximately 5.

11. (original) The fiber lens of claim 1, wherein a diameter of a core of the graded-index lens is in a range from approximately 50 to 500 μm .

12. (original) The fiber lens of claim 11, wherein an outer diameter of the graded-index lens is in a range from approximately 60 to 1,000 μm .

13. (currently amended) The fiber lens of claim 1, wherein a relative index difference between a core and cladding of the graded-index lens is in a range from approximately 0.5 to 3%.

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14. (original) The fiber lens of claim 1, wherein an operating wavelength of the fiber lens is in a range from 250 to 2,000 nm.

15. (original) A fiber lens, comprising:

a single-mode fiber; and

a lens disposed at an end of the single-mode fiber;

wherein a mode field at a beam waist of a beam emerging from a tip of the lens is less than 10 μm and a ratio of distance from the tip of the lens to the beam waist to the mode field diameter at the beam waist is greater than 5.

16. (original) The fiber lens of claim 15, wherein the lens comprises a hyperbolic or near-hyperbolic lens disposed at an end of a graded-index lens.

17. (amended) The fiber lens of claim 16, wherein a coreless spacer rod is interposed between the hyperbolic or near-hyperbolic lens and the graded-index lens.

18-21. (cancelled)

22. (currently amended) The A fiber lens of claim 21, comprising:

a graded-index lens;

a single-mode fiber disposed at a first end of the graded-index lens; and

a refractive lens disposed at a second end of the graded-index lens, the refractive lens having a near-hyperbolic shape that focuses a non-collimated beam into a diffraction-limited spot;

wherein the near-hyperbolic shape is a modified hyperbolic shape with a correction factor that compensates for beam curvature such that the non-collimated beam is focused into the diffraction-limited spot.